CLAIMS IN PLAIN TEXT FORM

1. (Amended) A thermally curable adhesive composition consisting essentially of:

(a) a thermosetting polymer, or a monomer which is polymerisable to yield a thermosetting polymer, where said polymer is crosslinkable when subject to the action of a chemical crosslinking agent;

(b) a chemical crosslinking agent for said polymer, the crosslinking agent having fluxing properties and exhibiting either no reactivity or but insignificant reactivity with the polymer at ambient temperature and without the action of a catalyst and/or heat, but which crosslinking agent serves to crosslink said polymer in the presence of heat equal to or greater than a melting point of solder, or in presence of the catalyst, or in presence of both the heat and the catalyst; and

wherein the composition is thermally curable when heated to soldering temperatures in the presence of a catalyst because the polymer is crosslinked by action of the crosslinking agent.

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2. (Restated) A composition according to claim 1, wherein the chemical crosslinking agent is solid at ambient temperature.

3. (Amended) A composition according to claim 2, wherein said chemical crosslinking agent is selected from a group consisting essentially of polyacids, polyanhydrides and hydrazides which are solid at ambient temperature and insoluble in the monomer or polymer until heated to soldering temperature.

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4. (Restated) A composition according to claim 3, wherein the polyacid is selected from polymers containing two or more carboxyl groups and di-and polycarboxylic acids and di-and polyanhydrides.

5. (Restated) A composition according to claim 4, wherein the polycarboxylic acid is a C_8 or greater dicarboxylic acid.

6. (Restated) A composition according to claim 3, wherein the hydrazide is a monohydrazide, dihydrazide or polyfunctional hydrazide.

7. (Amended) A composition according to any claim 6, wherein the crosslinking agent contains a dihydrazide and/or a dicarboxylic acid.

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8. (Amended) A composition according to claim 6, wherein the crosslinking agent contains adipic dihydrazide and/or dodecanedioic acid.

9. (Restated) A composition according to claim 4, wherein the crosslinking agent is a styrene acrylic acid copolymer.

10. (Amended) A composition according to claim 1, which has thermosetting polymer-solid crosslinking agent/flux content in which there are from 30% to 70% by weight of thermosetting polymer and from 70% to 30% by weight of solid crosslinking agent/flux.

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11. (Amended) A composition according to claim 1, wherein said thermosetting polymer content is from 20% to 80% by weight and said solid crosslinking agent/flux from 80% to 20% by weight of the total amount of thermosetting polymer and crosslinking agent/flux.

12. (Amended) A composition according to any one of claim 1, wherein said polymer is an epoxy resin.

13. (Restated) A composition according to claim 12, wherein said polymer is a B-staged epoxy resin.

14. (Restated) A composition according to claim 13, wherein the said polymer is a diglycidyl ether of bisphenol A.

15. (Restated) A composition according to claim 14, wherein the said resin is a tri-or tetrafunctional epoxide or a difunctional

cycloaliphatic epoxide or a mixture of two or more such epoxides.

16. (Amended) A thermally curable adhesive composition consisting essentially of

(a) a thermosetting polymer, or a monomer which is polymerisable to yield a thermosetting polymer, where said polymer is crosslinkable when subject to the action of a chemical crosslinking agent;

(b) a chemical crosslinking agent for said polymer, said crosslinking agent having fluxing properties so as to flux metals to create metal salts that are catalytic for promoting crosslinking of the polymer by the chemical crosslinking agent; and

(c) an acid flux which is liquid at temperatures below 100°C that fluxes metals so as to create metallic salt, said metallic salt being non-catalytic for the reaction of (a) and (b) above;

wherein metals are fluxed by both the acid flux and by the chemical crosslinking agent to produce metal salts, but only metal salts produced by action of the fluxing with the chemical crosslinking agent serve to catalyze the crosslinking of the polymer by the chemical crosslinking agent.

17. (Restated) A composition according to any claim 16, wherein the acid flux is liquid at temperatures from 20°C to 25°C.

18. (Amended) A composition according to Claim 16, wherein the acid flux is a monocarboxylic acid, preferably containing at least eight carbon atoms.

19. (Restated) A composition according to Claim 18, wherein the acid flux is a versatic acid, capric acid, caprylic acid, lauric acid, stearic acid or palmitic acid.

20. (Amended) A composition according to Claim 16, which has a thermosetting polymer-flux content in which there are from 20% to 80% by weight of thermosetting polymer and from 80% to 20%by weight of flux, which flux is, in turn, made up from 80% to 97% by weight

of said solid crosslinking agent/acid flux and from 20% to 3% by weight of said acid flux.

21. (Amended) A composition according to Claim 26, which has a thermosetting polymer-flux content in which there are from 50% to 60% by weight of thermosetting polymer and from 50% to 40% by weight of flux, which flux is, in turn, made up from 85% to 95% by weight of said solid crosslinking agent/flux and from 15% to 5% by weight of said acid flux.

22. (Amended) A composition according to claim 1, which additionally contains a latent reaction catalyst selected from tertiary amines and imidazoles and metallic salts.

23. (Restated) A composition according to Claim 22, wherein the imidazole is phenyl imidazole.

24. (Amended) A composition according to Claim 22, wherein the tertiary amine is constituted by self catalyzing tertiary amine groups substituting the reactive monomer or polymer.

25. (Restated) A composition according to Claim 24, wherein the reactive monomer is a tertiary amine-substituted trifunctional or tetrafunctional epoxide.

26. (Restated) A composition according to claim 22, wherein the metallic salt is tin octanoate, dibutyl tin dilaurate, ferric acetylacetonate, and cobalt (III) acetylacetonate.

27. (Amended) A composition according to claim 1 which further comprises a thermally conductive filler.

28. (Restated) A composition according to Claim 27, wherein said filler reduces thermal expansion of the composition while not effecting substantially the viscosity thereof.

29. (Amended) A composition according to Claims 27, wherein the filler is constituted by nominally SA spherical ceramic beads or hollow spheres.

30. (Amended) A composition according to Claim 27, wherein the filler is a ceramic or glass ceramic powder comprising spherical particles with diameters in the range from 0.1μm to 25μm, preferably 1μm to 15μm.

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31. (Amended) A composition according to Claim 27, wherein the filler is a ceramic or glass ceramic powder consisting essentially of monodisperse spherical particles having a single diameter in the range from, 0.1 to 25μm, preferably 1-15μm.

32. (Restated) A composition according to Claim 27, wherein the filler is a thermally conductive ceramic powder.

33. (Restated) A composition according to Claim 32, wherein the ceramic powder is selected from SiO_2, MgO, Al_2O_3, TiO_2/ZnO, barium sulphate and diamond dust.

34. (Amended) A composition according to Claim 30, wherein the ceramic powder has a low or negative coefficient of thermal expansion.

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35. (Amended) A composition according to Claim 34, wherein the ceramic powder is aluminum lithium silicate.

36. (Amended) A method of producing an electronic device comprising;

opposing an electrical component having a plurality of electrical terminations, each termination including a solder bump, and a component-carrying substrate having a plurality of electrical terminations corresponding to the terminations of the electrical component;

applying a thermally curable adhesive composition to a metal

surface at one and/or both of said electrical component and said substrate;

bringing the electrical component and substrate into contact at elevated temperature so as to solder the electrical component to the substrate while simultaneously achieving encapsulation thereof in thermoset polymer produced in situ from monomer or polymer in the adhesive composition, in which method

(1) the thermally curable adhesive composition consists essentially of

(a) a thermosetting polymer, or a monomer which is polymerisable to yield a thermosetting polymer, where said polymer is crosslinkable when subject to the action of a chemical crosslinking agent;

(b) a chemical crosslinking agent for said polymer, the crosslinking agent having fluxing properties and exhibiting either no reactivity or but insignificant reactivity with the polymer at ambient temperature and without the action of a catalyst and/or heat, but which crosslinking agent serves to crosslink said polymer in the presence of heat equal to or greater than a melting point of solder, or in presence of the catalyst, or in presence of both the heat and the catalyst;

wherein the composition is thermally curable at temperatures above the melting point of solder of the solder bump and in the presence of a catalyst for the crosslinking of the polymer with the crosslinking agent; and

(2) catalysis is achieved by metal oxide removed from metal surfaces by reaction between the metal oxide serving as the catalyst and the crosslinking agent.

37. (Amended) A method as claimed in Claim 36, wherein the thermally curable adhesive composition is applied to one and/or both of said electrical component and said substrate prior to bringing said electrical component and said substrate together.

38. (Amended) A method as claimed in Claim 36, wherein no fluxing agent is applied to either said electrical component or said

substrate prior to application of the solder curable adhesive composition.

39. (Amended) A method as claimed in any one of Claim 36, wherein the thermally curable adhesive composition is applied to a die, which is either in wafer form or as separate discrete devices.

40. (Amended) A method as claimed in any one of Claim 36, wherein the thermally curable adhesive composition is applied by screen printing, stencil printing, dispensing or spinning.

41. (Amended) A method as claimed in Claim 36 wherein the thermally curable adhesive composition consists essentially of

(a) a thermosetting polymer, or a monomer which is polymerisable to yield a thermosetting polymer, where said polymer is crosslinkable when subject to the action of a chemical crosslinking agent;

(b) a chemical crosslinking agent for said polymer, the crosslinking agent having fluxing properties and exhibiting either no reactivity or but insignificant reactivity with the polymer at ambient temperature and without the action of a catalyst and/or heat, but which crosslinking agent serves to crosslink said polymer in the presence of heat equal to or greater than a melting point of solder, or in presence of the catalyst, or in presence of both the heat and the catalyst; and

wherein the composition is thermally curable when heated to soldering temperatures in the presence of a catalyst because the polymer is crosslinked by action of the crosslinking agent.

42. (Amended) A method as claimed in any one of Claim 36, wherein the thermally curable adhesive composition is applied in B-stageable form and B-staged in situ.

43. (Added) A thermally curable adhesive composition consisting essentially of:

a thermosetting polymer, or a monomer which is polymerisable

to yield a thermosetting polymer, suitably cross-linked by action of a chemical crosslinking agent; and

a chemical effective to cross-link the polymer at temperatures equal to or greater than the melting point of solder but ineffective to cross-link the polymer at lower temperatures;

wherein the poylmer will be cross-linked by action of the chemical at temperatures equal to or greater than the melting point of solder, but will be insubstantially cross-linked at temperatures less than the melting point of solder.

44. (Added) A thermally curable adhesive composition consisting essentially of

a thermosetting polymer, or a monomer which is polymerisable to yield a thermosetting polymer, suitably cross-linked action of a chemical crosslinking agent;

a chemical effective to cross-link the polymer in the presence of a metal salt catalyst but ineffective to cross-linked the polymer without presence of the metal salt catalyst, the chemical also having fluxing properties suitable to flux metals to create metal salts that are catalytic for promoting cross-linking of the polymer by the chemical;

wherein when the chemical with fluxing properties is in contact with unmelted solder then metals at the surface of the unmelted solder will be fluxed to produce the metal salts that are catalytic for promoting cross-linking of the polymer by the chemical, but only such scant amount of metals will be fluxed, and only such scant amount of metal salts will be produced, as will but insubstantially catalyze the cross-linking of the polymer by the chemical;

wherein when the chemical with fluxing properties is in contact with melted solder then metals of the melted solder will be fluxed to produce copious metal salts that are catalytic for promoting cross-linking of the polymer by the chemical, effectively catalyzing the cross-linking of the polymer by the chemical.

45. (Added) The thermally curable adhesive composition according

to claim 43 further consisting essentially of

an acid flux, liquid at temperatures below 100°C, that fluxes metals in solder so as to create metallic salt, said metallic salt being non-catalytic for promoting cross-linking of the polymer by the chemical;

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wherein metals are fluxed by both the acid flux and by the chemical to produce metal salts, but only metal salts produced by action of fluxing with the chemical serve to catalyze the crosslinking of the polymer by the same chemical in its capacity as crosslinking agent.